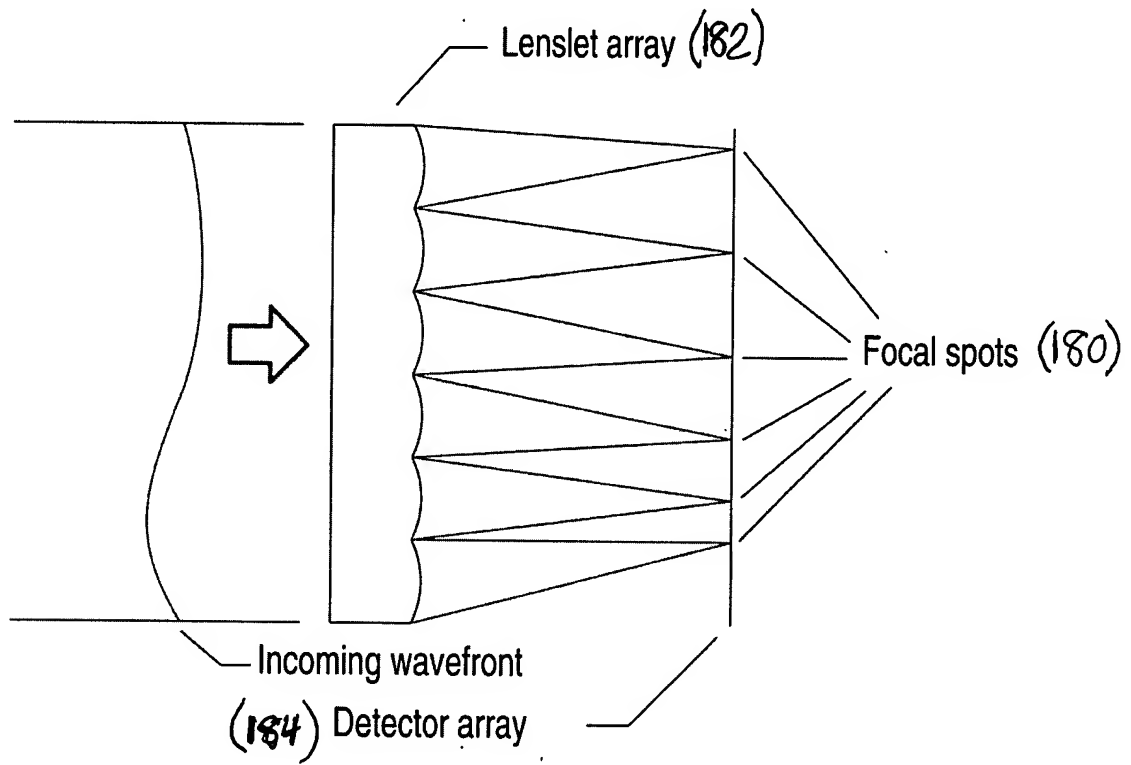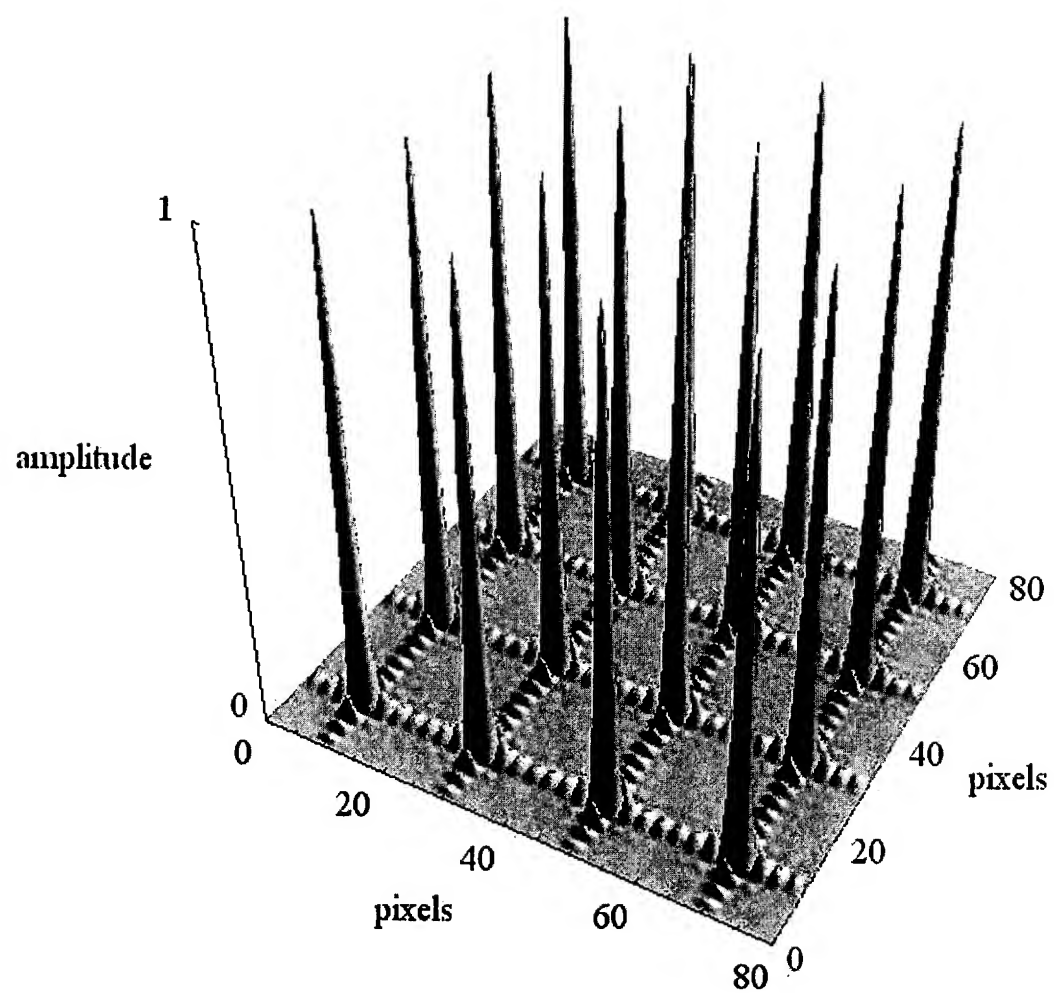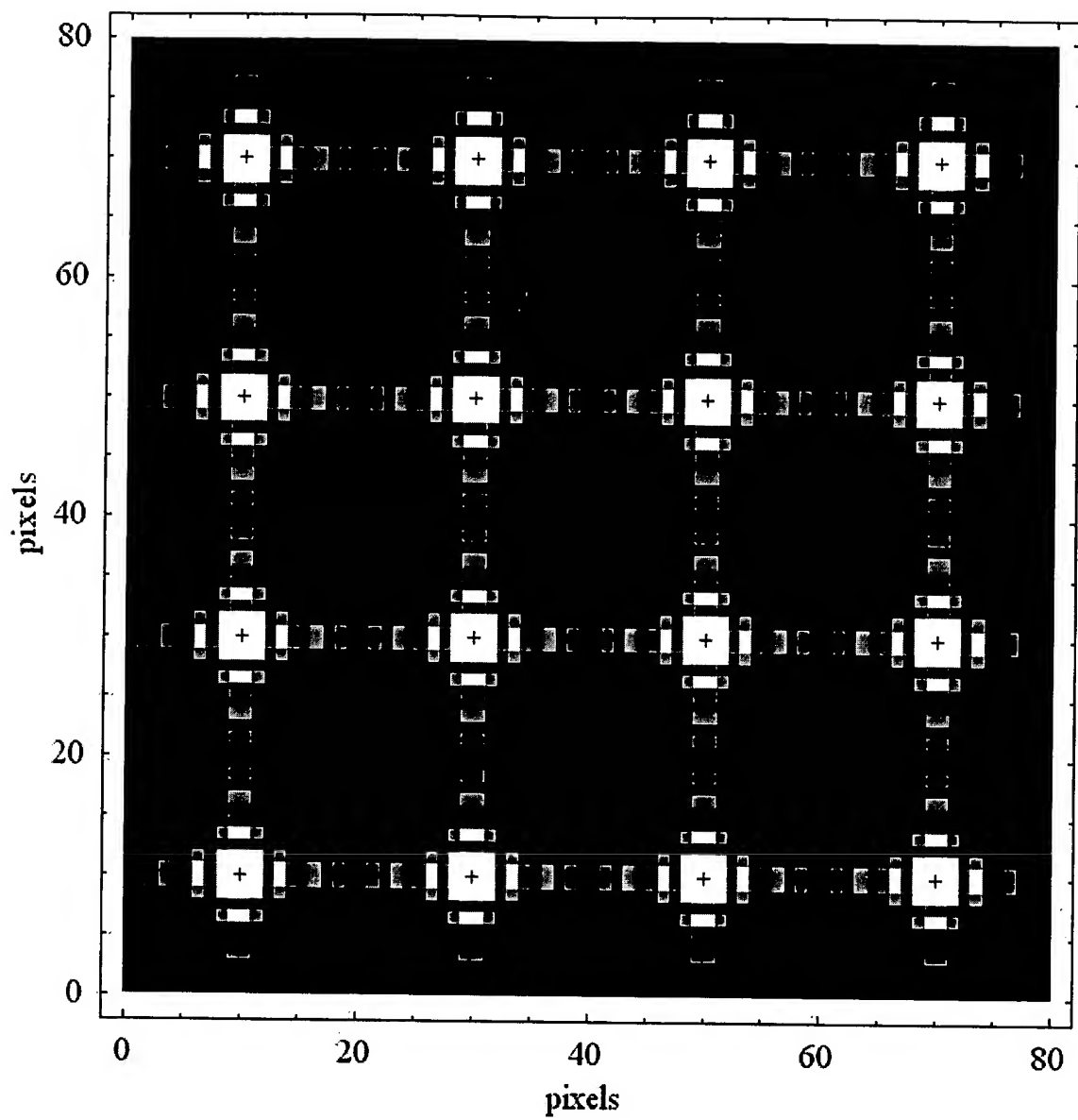180

Lenslet array (182)

Focal spots (180)

Incoming wavefront

(184) Detector array

FIG. 1

FIG. 2A

FIG. 2B
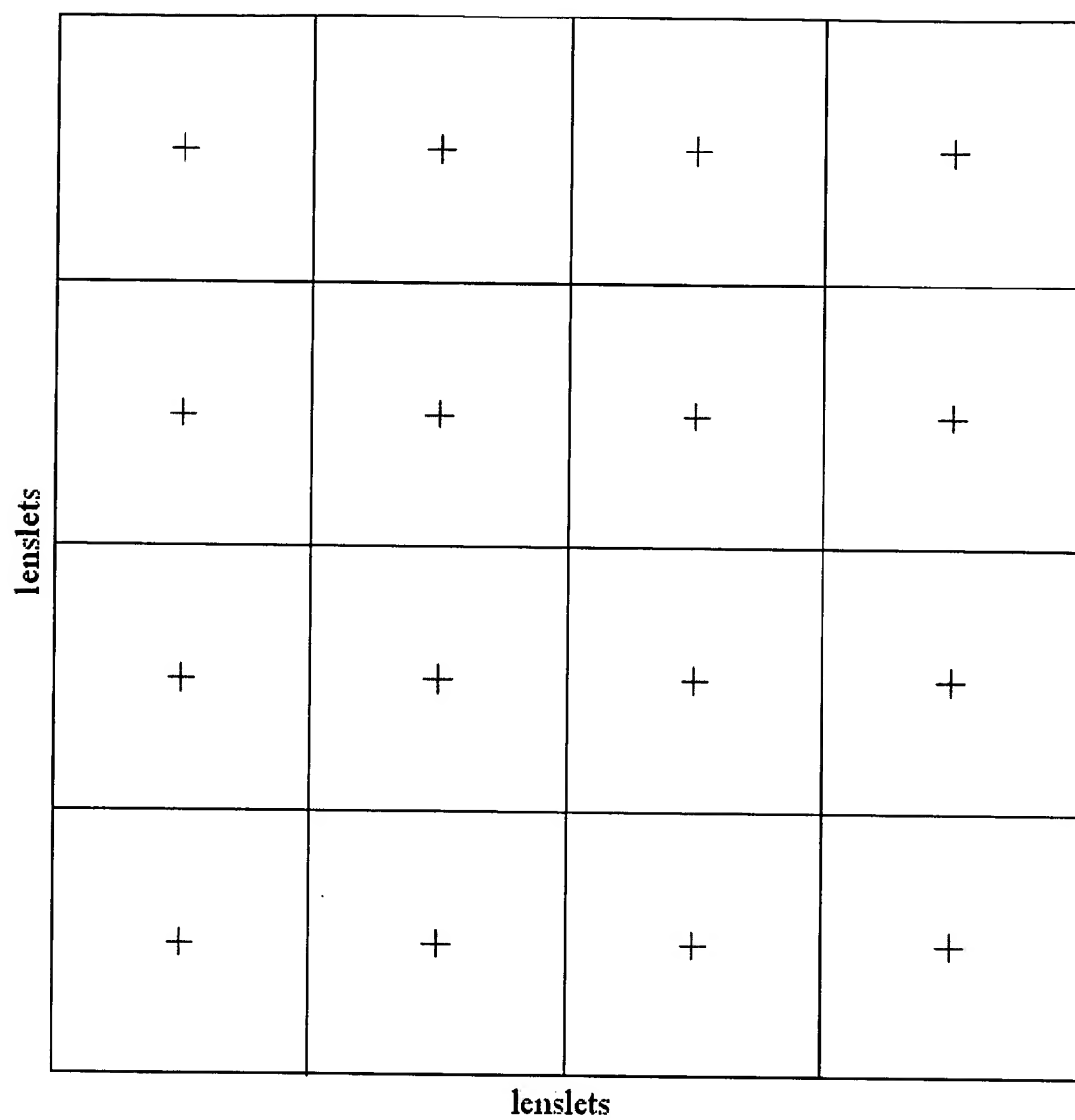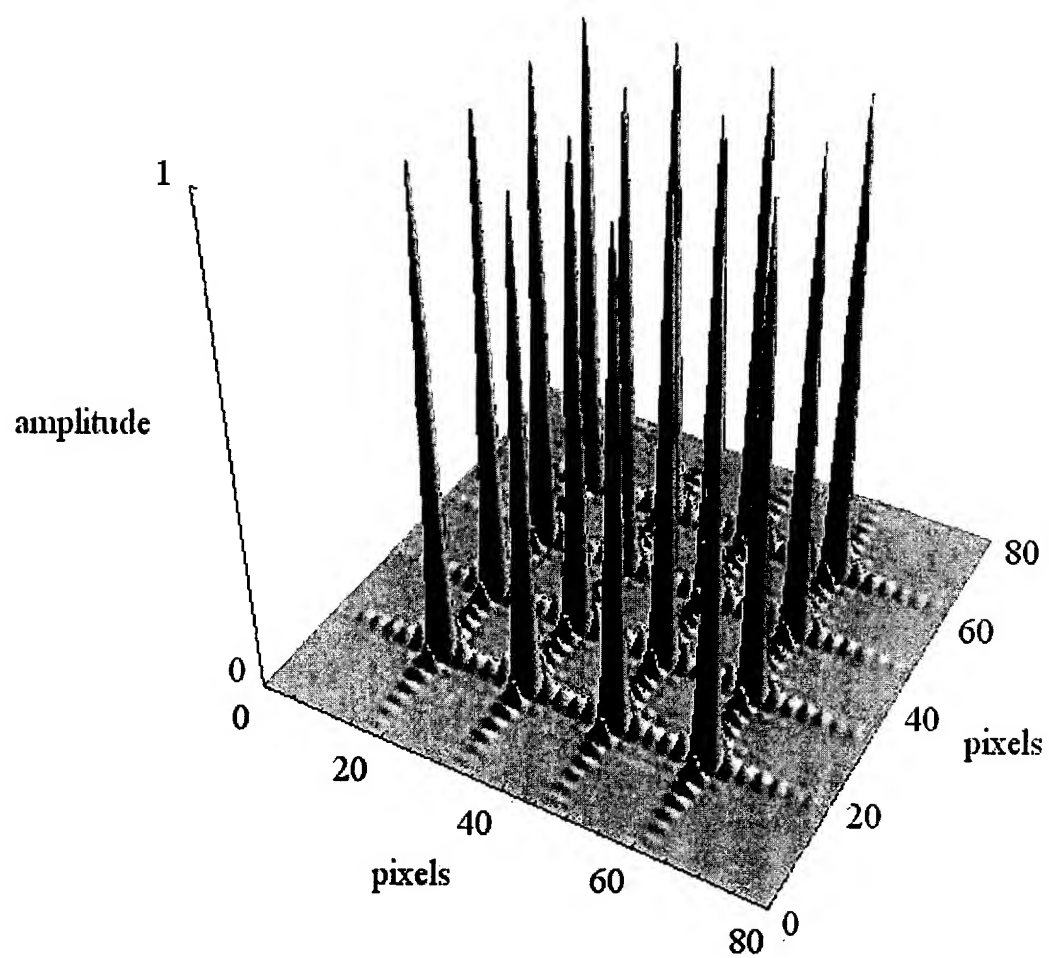
FIG. 2C
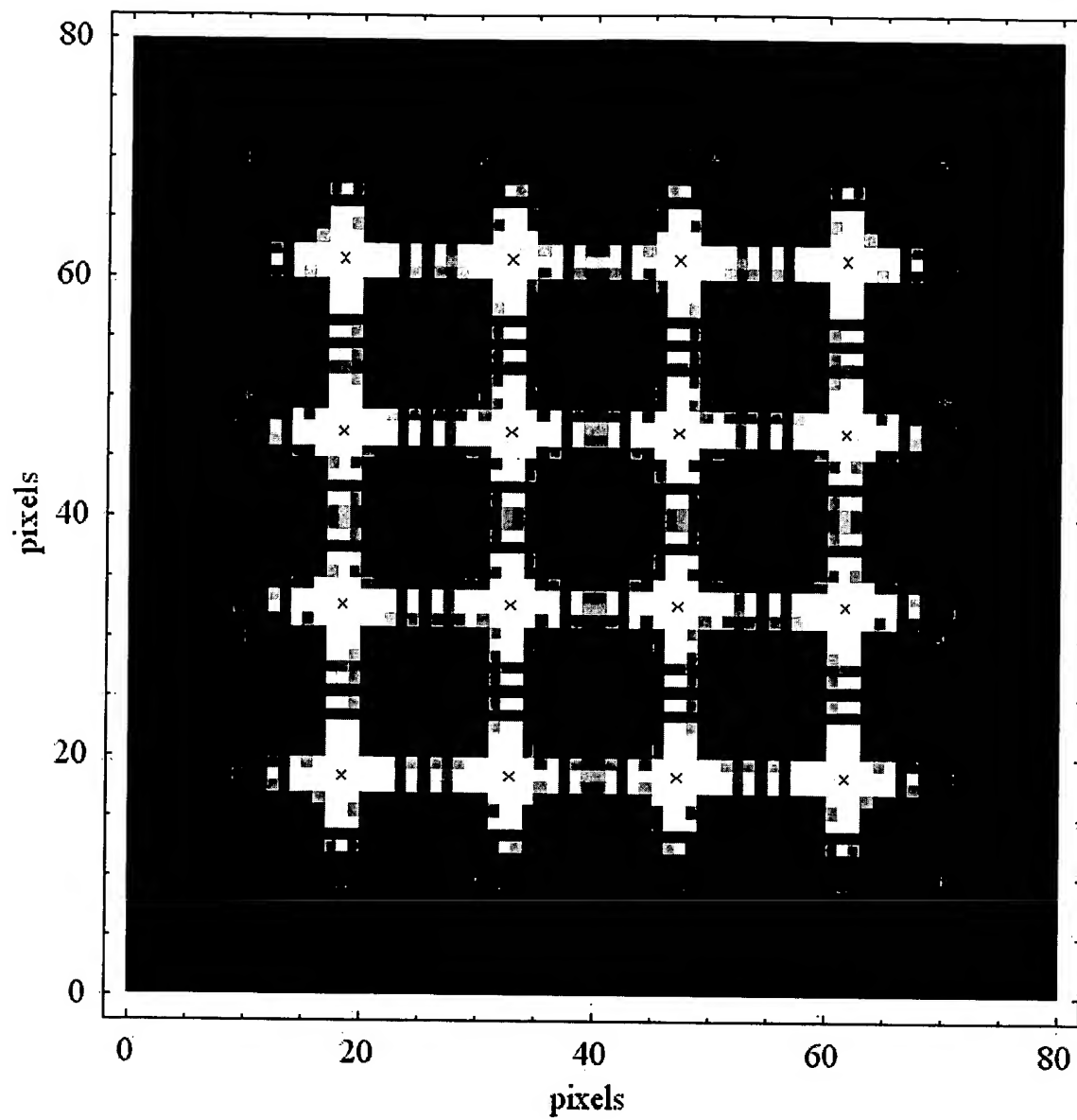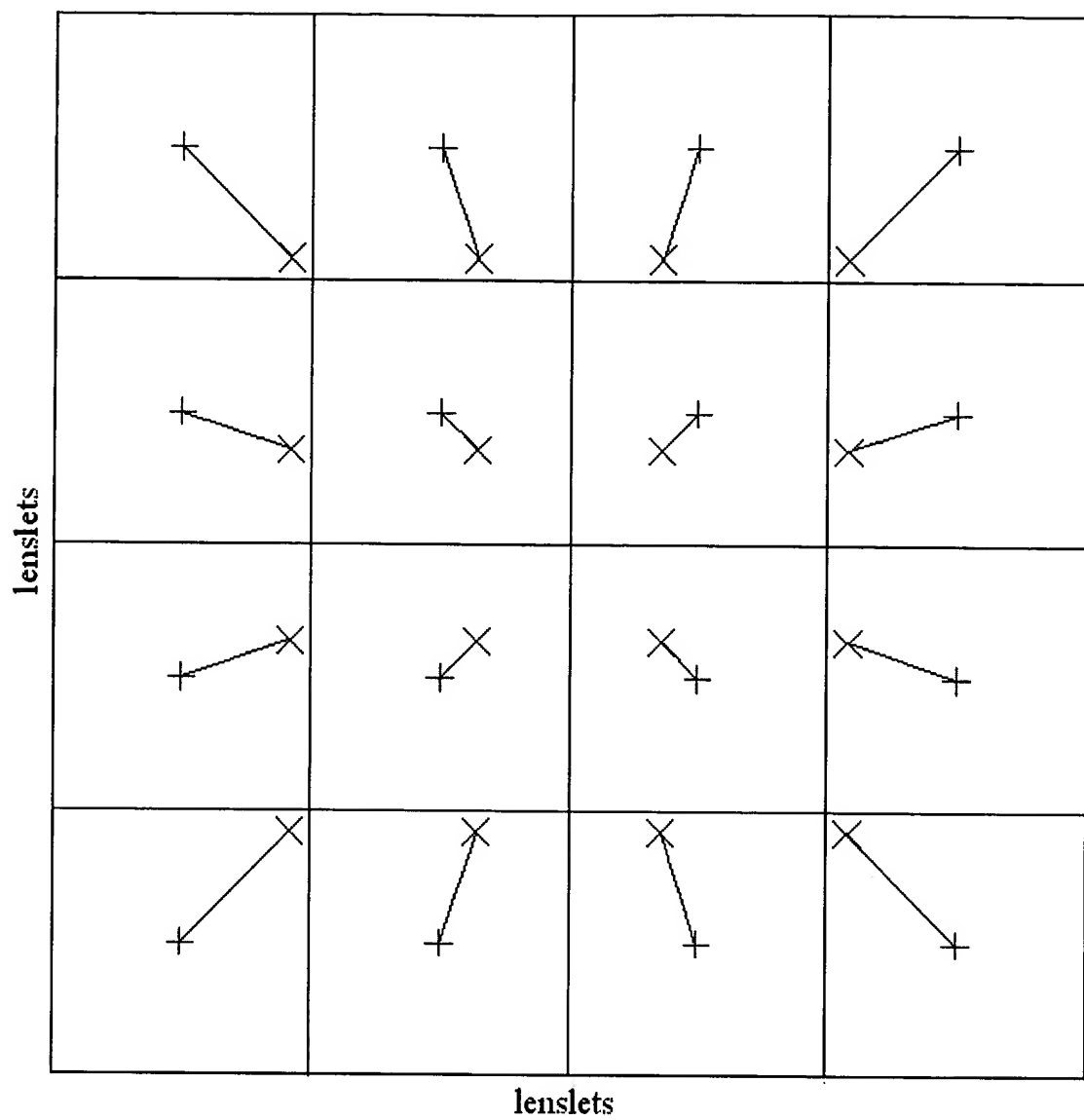
FIG. 2D

FIG. 2E

FIG. 2F

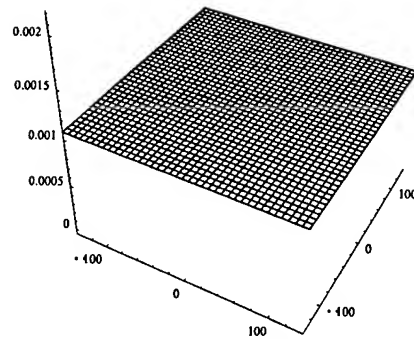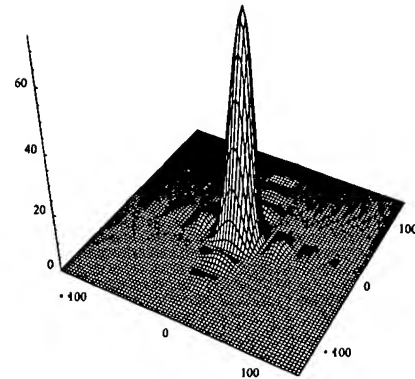**incident wavefront**   **irradiance distribution**

$\psi_{00}(x,y) = 1$
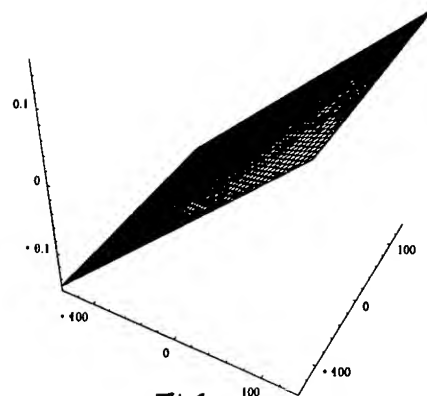

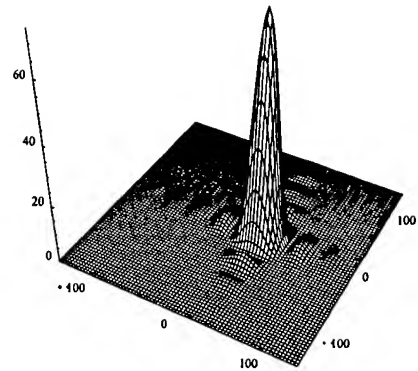FIG. 3A

FIG. 3D

$\psi_{10}(x,y) = x$

FIG. 3B

FIG. 3E
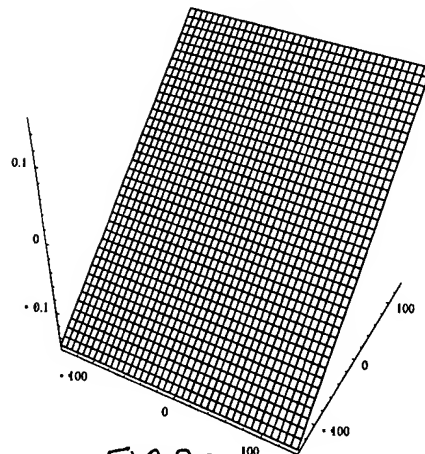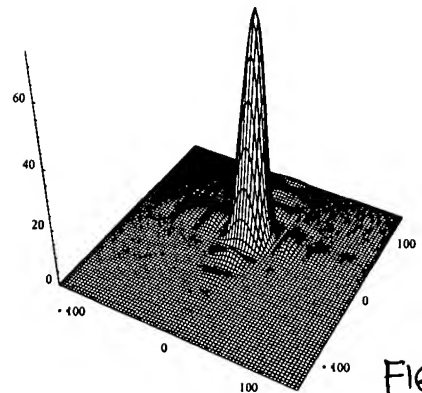
$\psi_{01}(x,y) = y$

FIG. 3C

FIG. 3F

Figure 3: The planar wavefronts incident upon a lenslet. The first column shows the functional form of the incident wavefront. The second column graphically shows the wavefront incident upon the lenslet. The final column is a plot of the spatial irradiance distribution in the focal plane. Note that in these examples over 95% of the light is confined to an area the size of a lenslet. The x and y axes are in microns. The vertical scale in the first column is also in microns. The vertical axis on the second column represents intensity and is in arbitrary units.
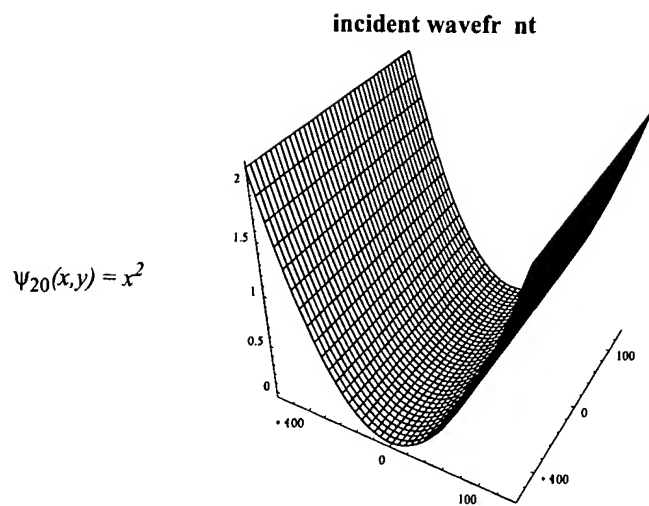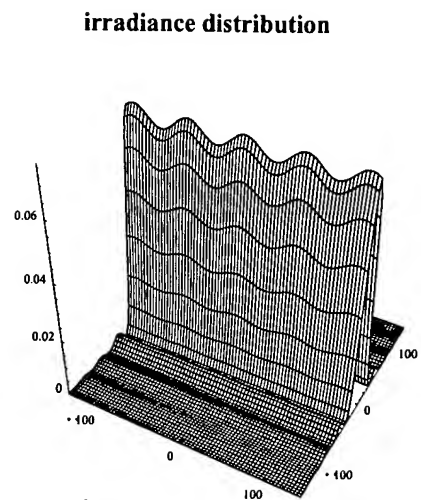
incident wavefr nt
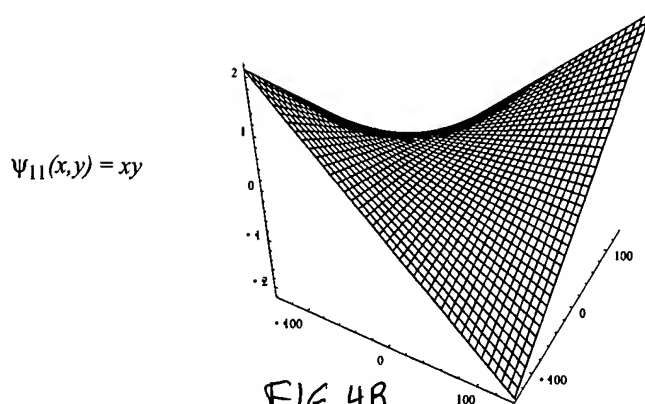
irradiance distribution

$\psi_{20}(x,y) = x^2$

FIG. 4A

FIG. 4D

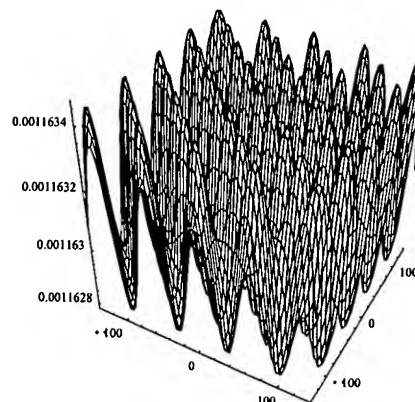$\psi_{11}(x,y) = xy$

FIG. 4B

FIG. 4E
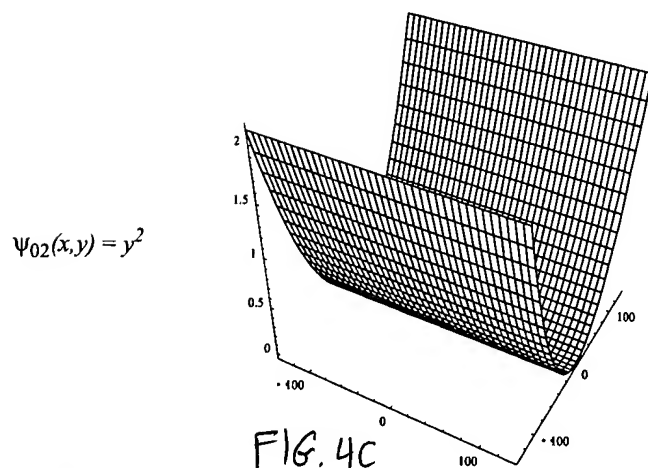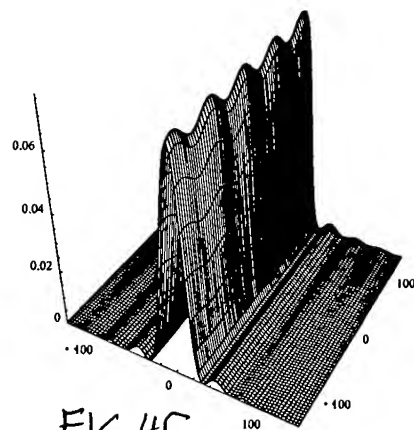
$\psi_{02}(x,y) = y^2$

FIG. 4C

FIG. 4F

Figure 4: The next three terms in the series of increasingly more complicated incident wavefronts. Clearly the focal spots are degrading rapidly where the incident wavefront has a non-planar structure. Notice the concept of a peak is ambiguous here and the center of mass computation could be highly problematic. Also, only a small portion of the light falls within the lenslet area. The x and y axes are in microns. The vertical scale in the first column is also in microns. The vertical axis on the second column represents intensity and is in arbitrary units.
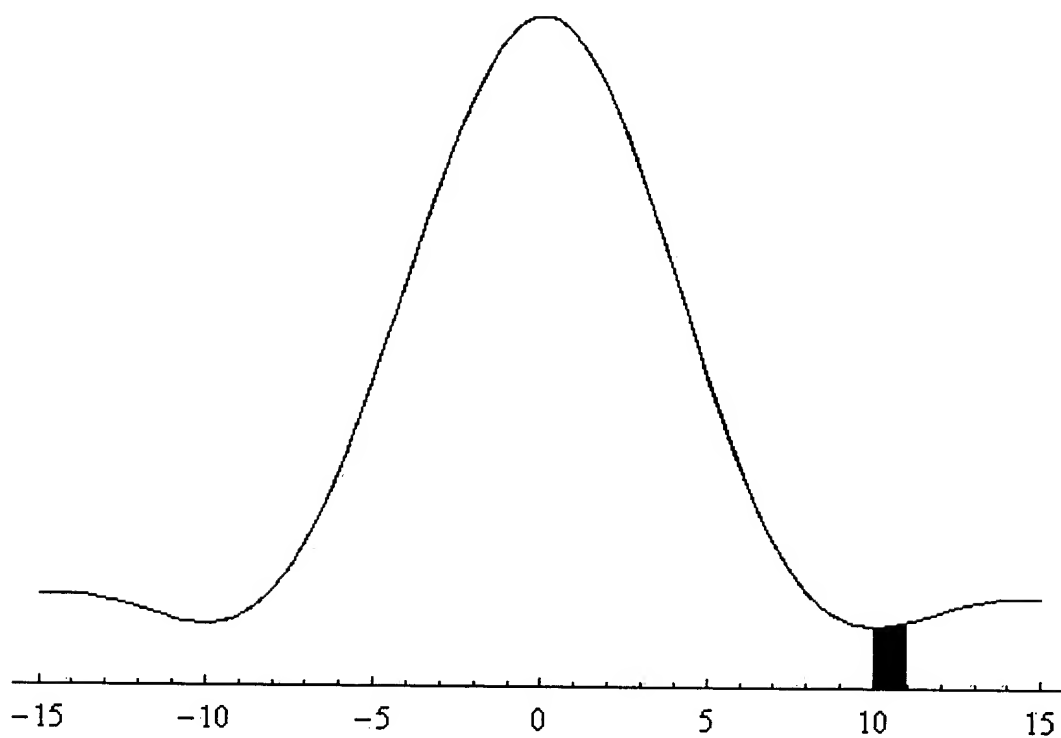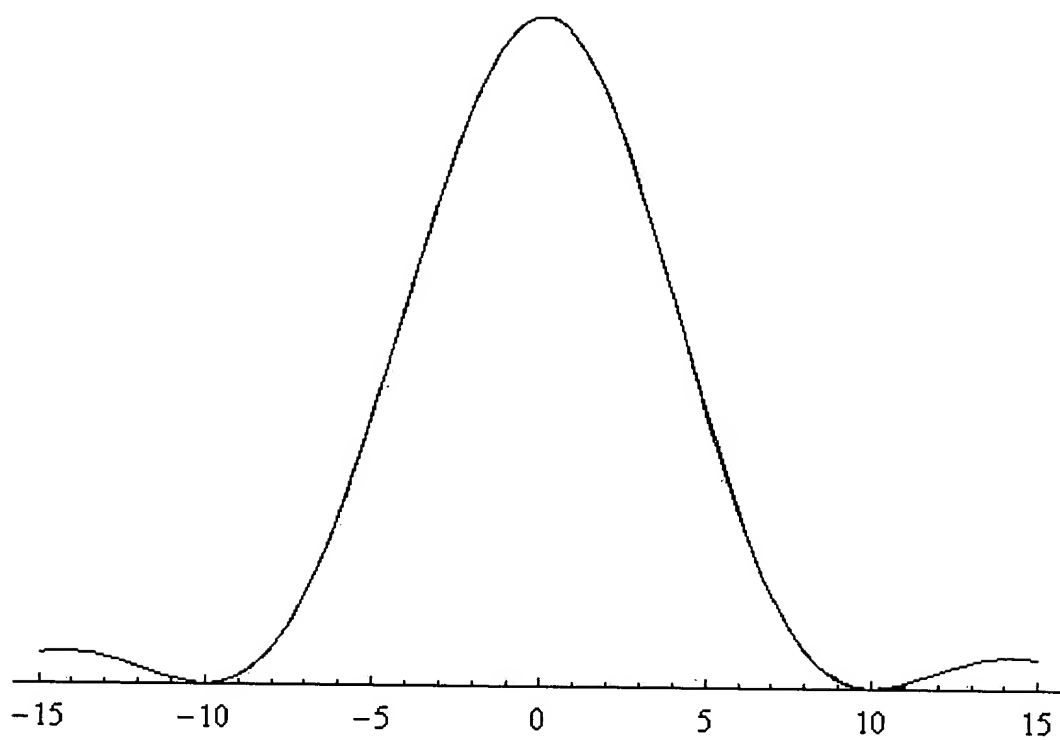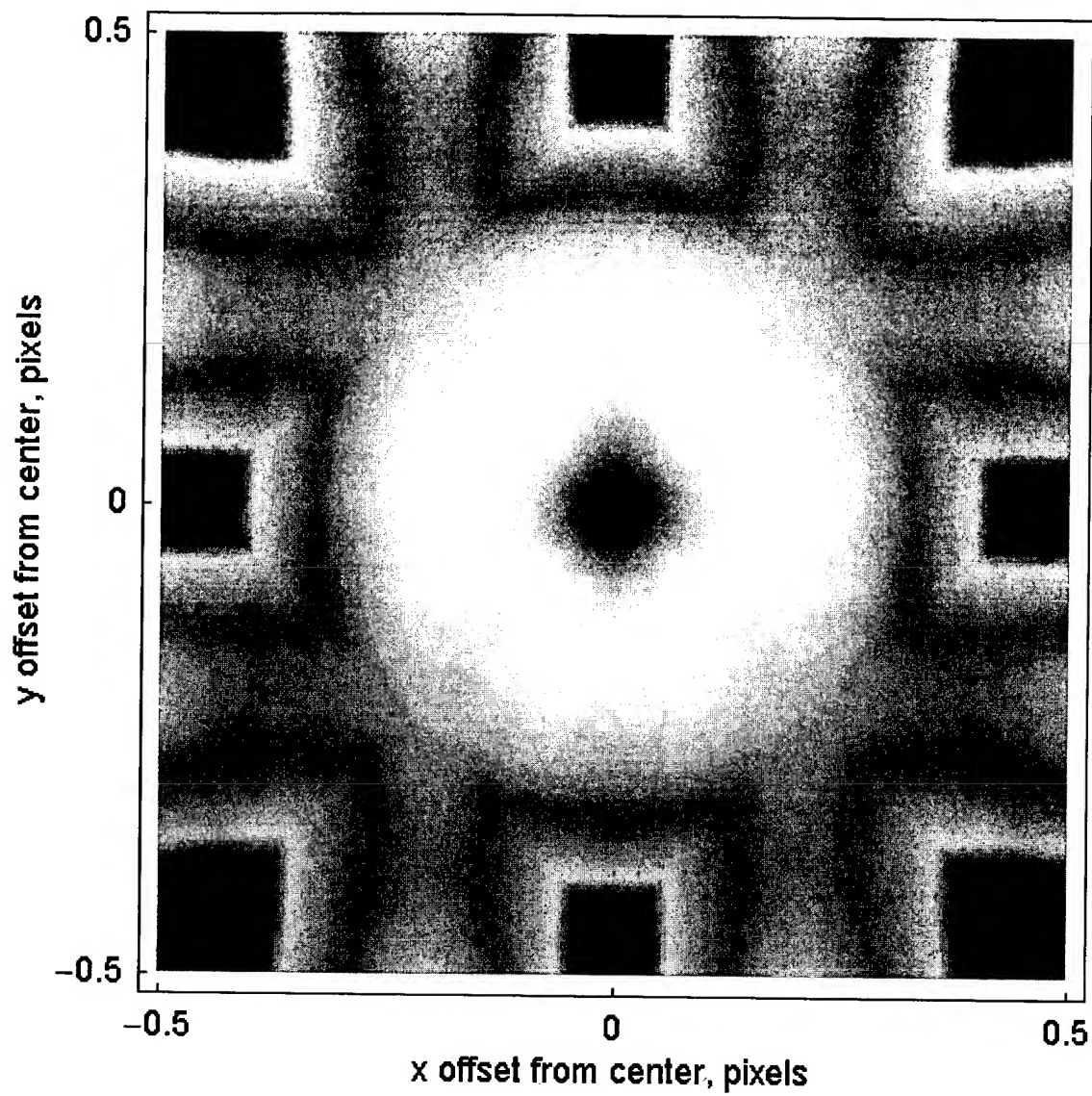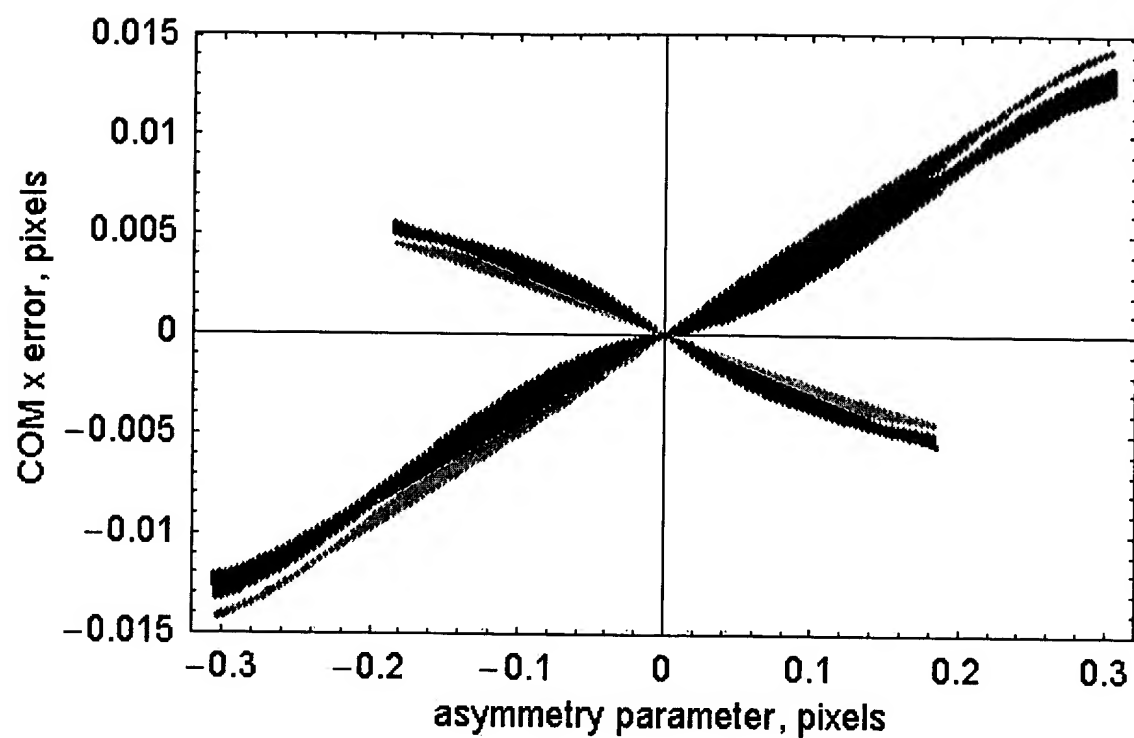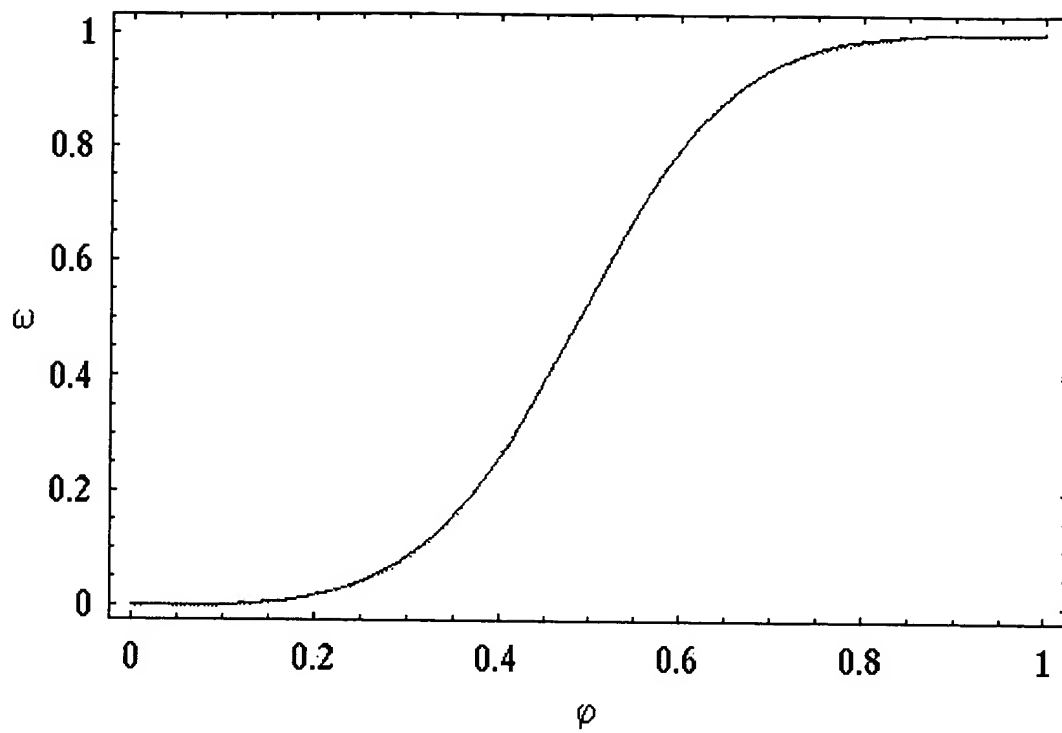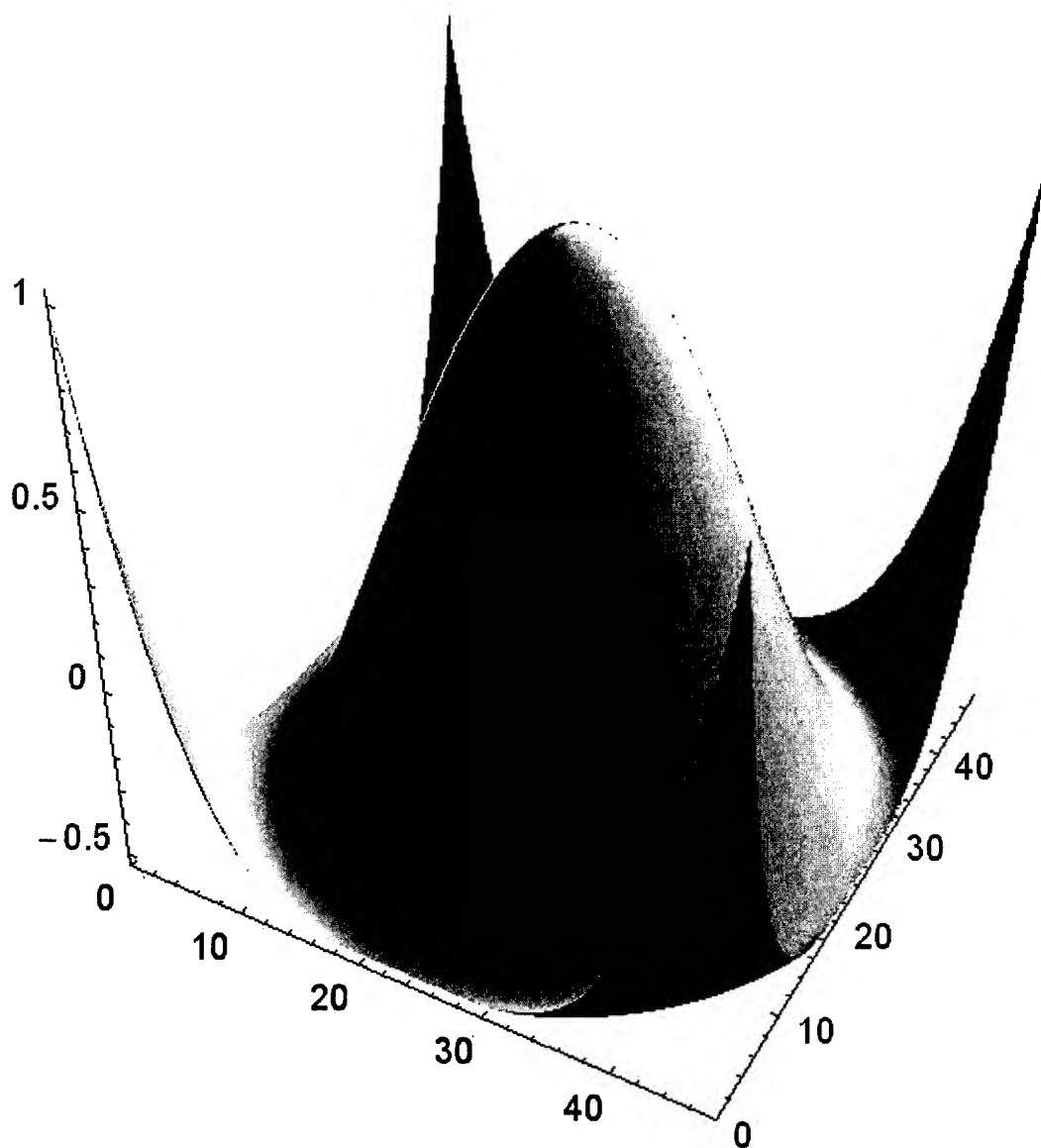
FIG. 5

FIG. 6A

FIG. 6B

FIG. 7

FIG. 8

FIG. 9

FIG. 10

focal spot shift, 1
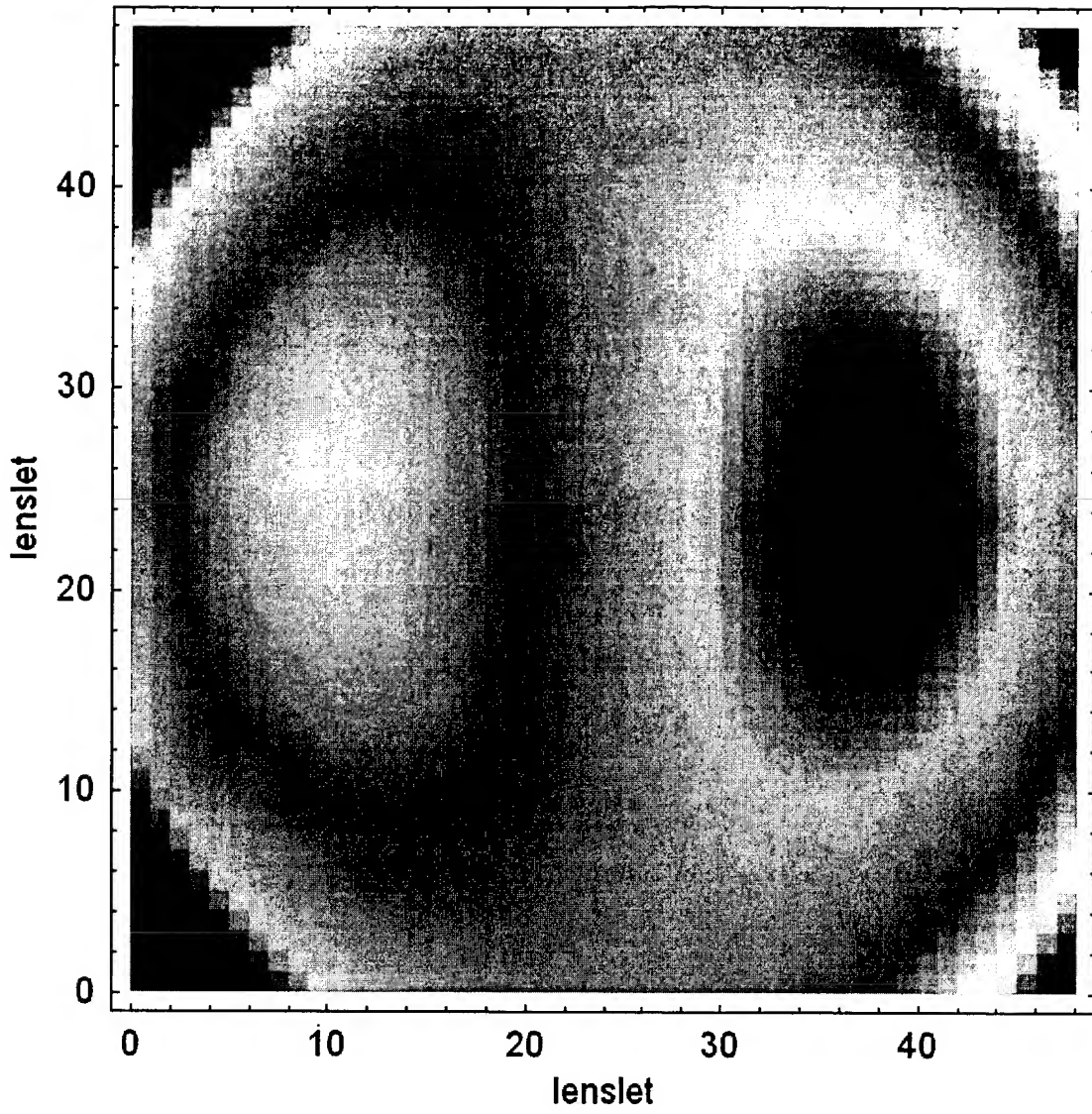
FIG. 11

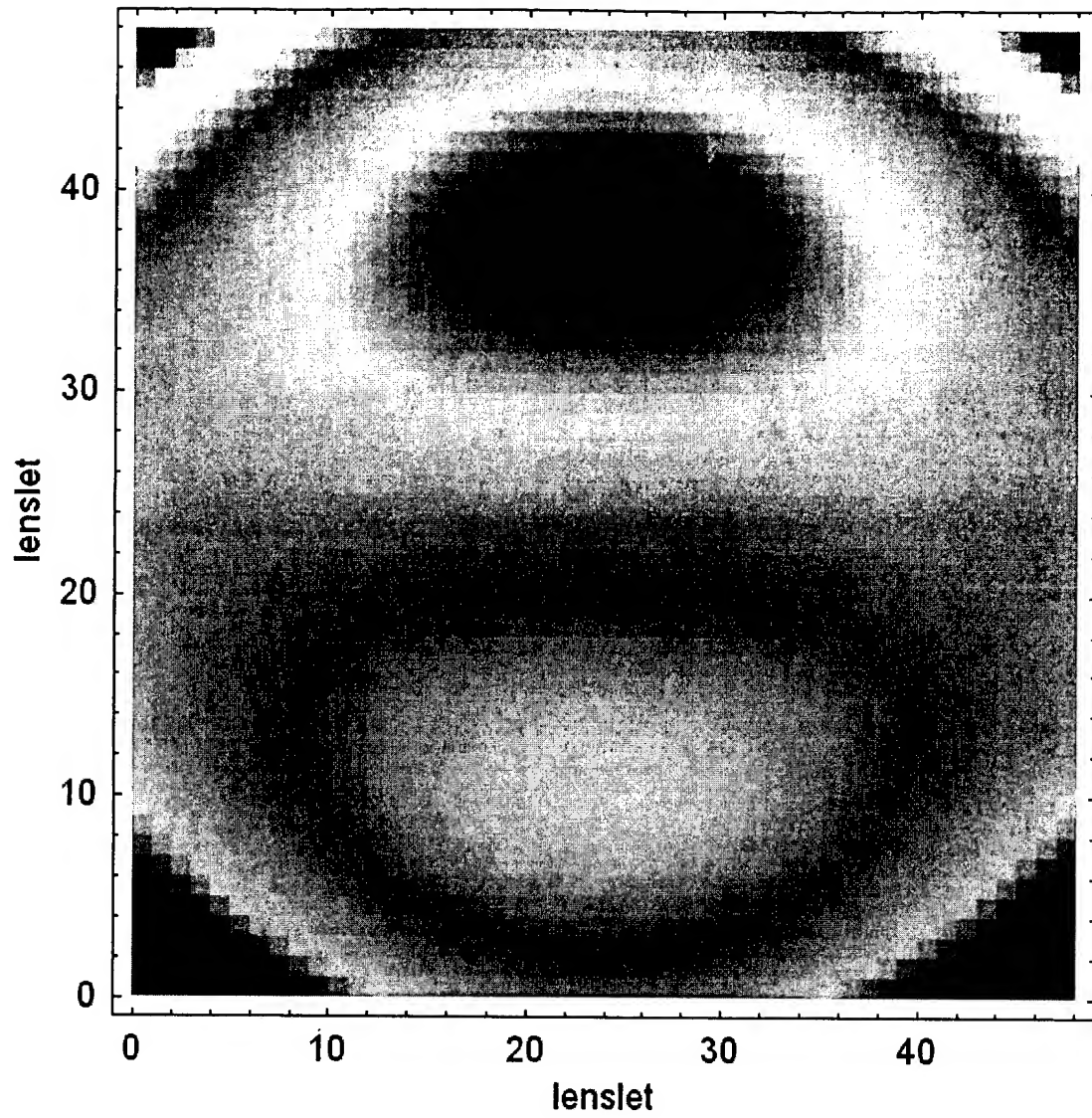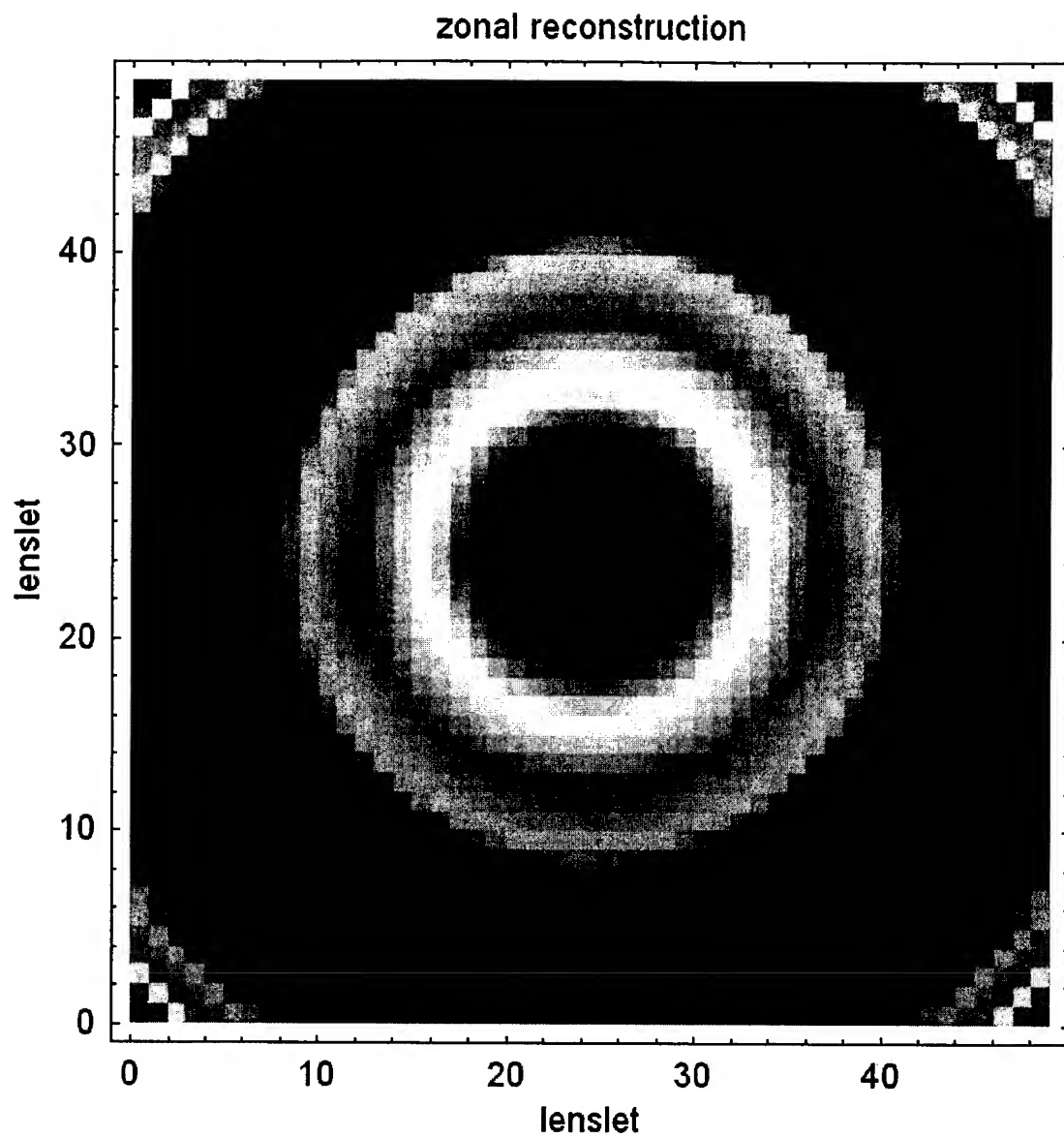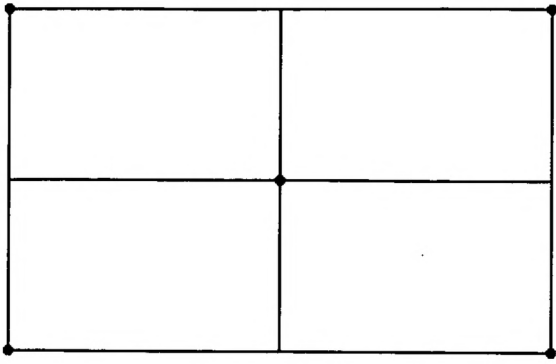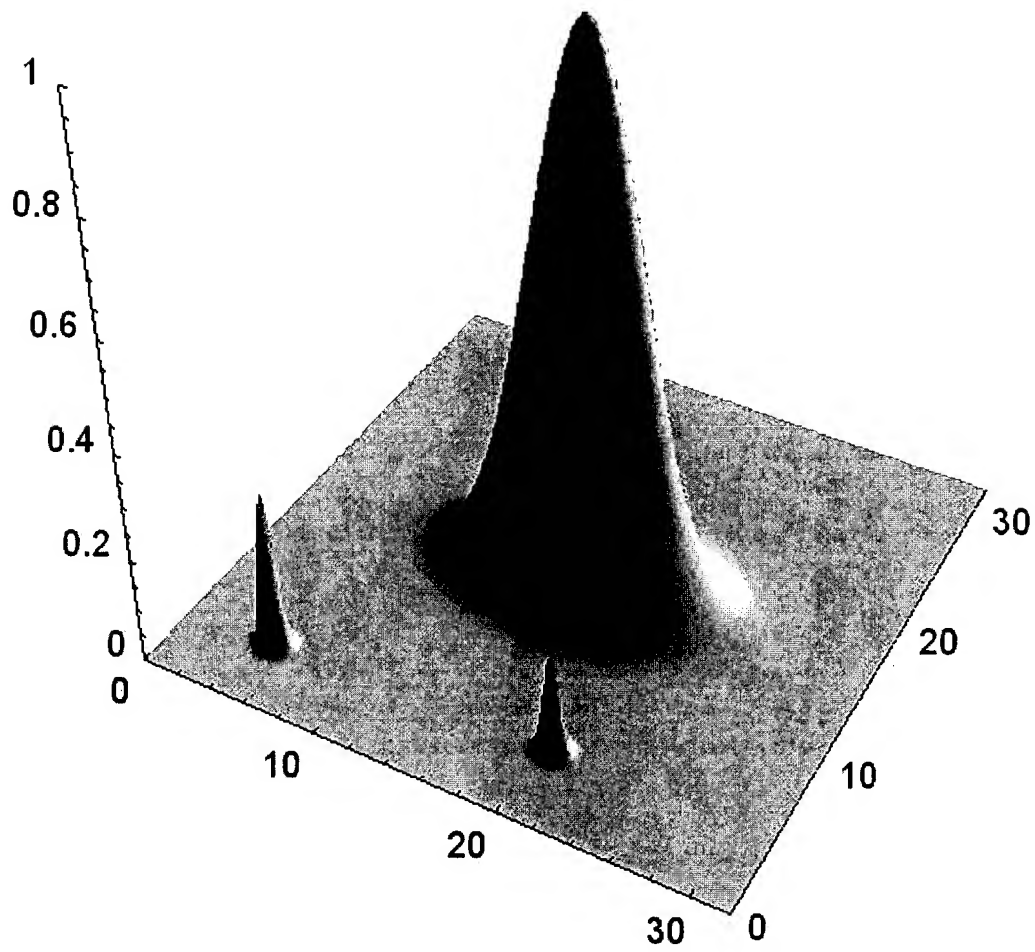focal spot shift, 2

FIG. 12

zonal reconstruction
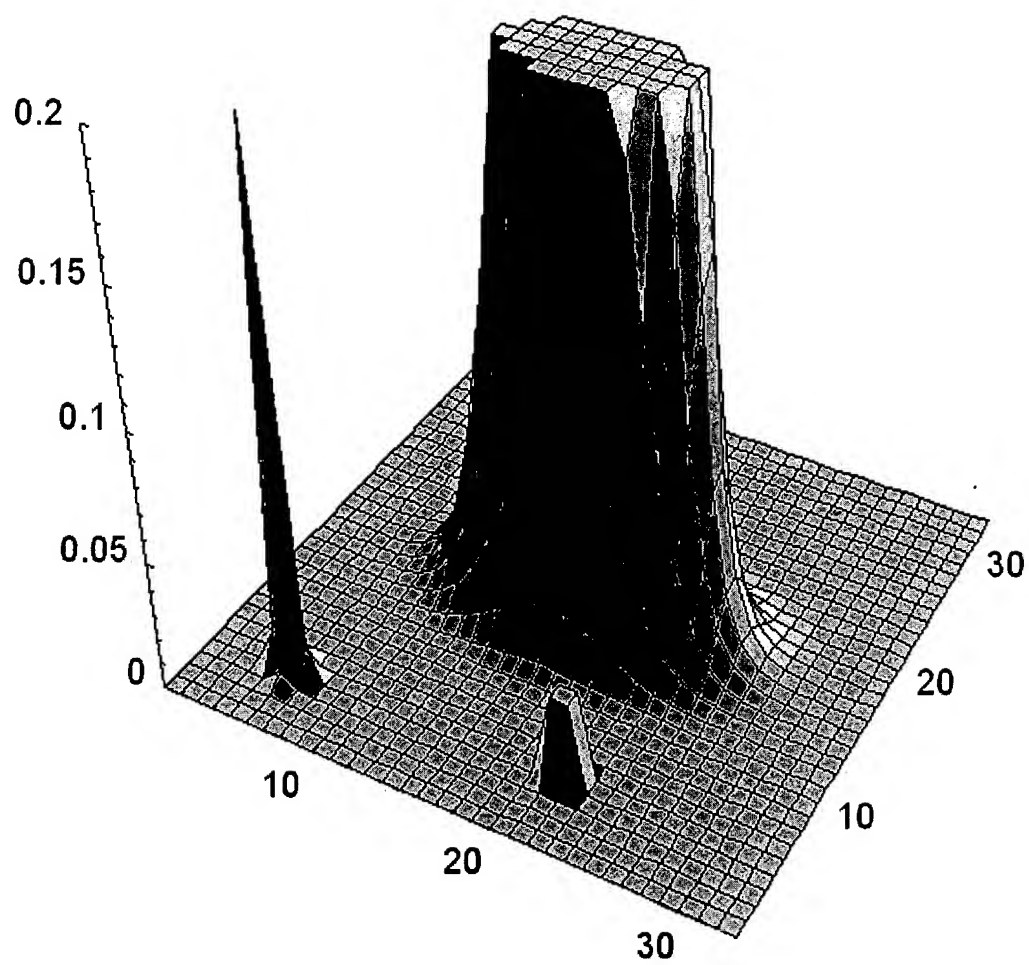

FIG. 13

FIG. 14

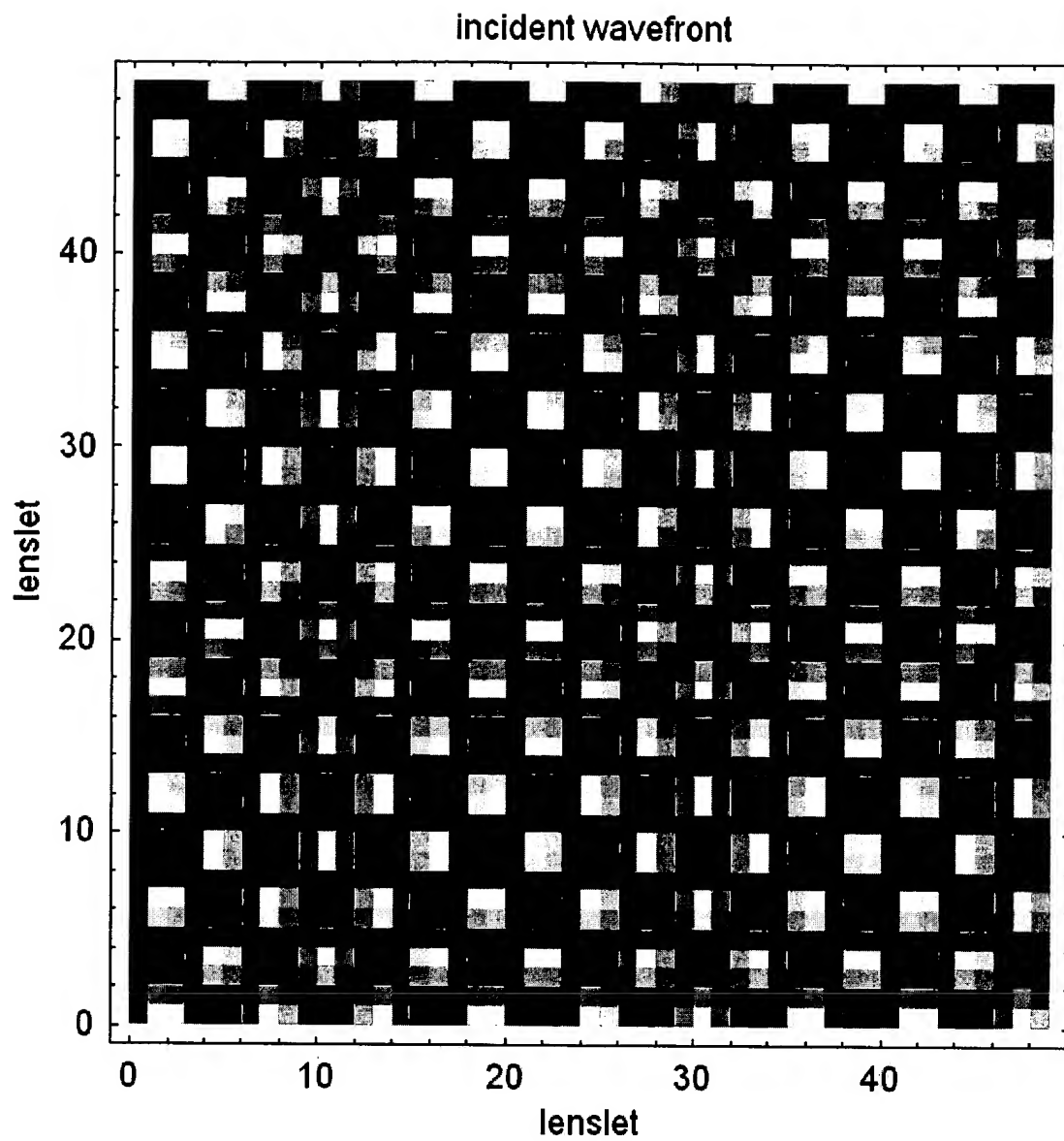FIG. 15

FIG. 16

FIG. 17

FIG. 18

FIG- 19

incident wavefront
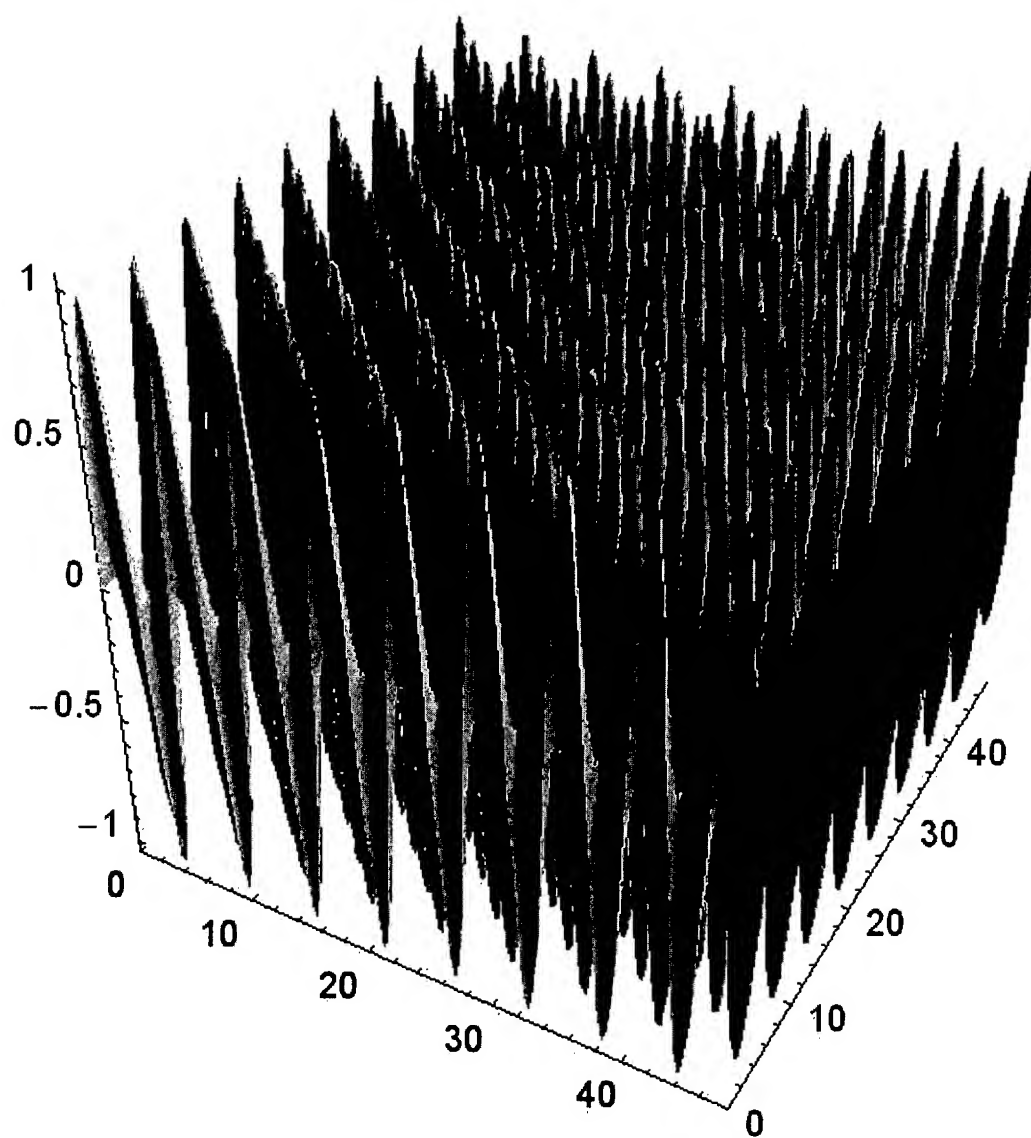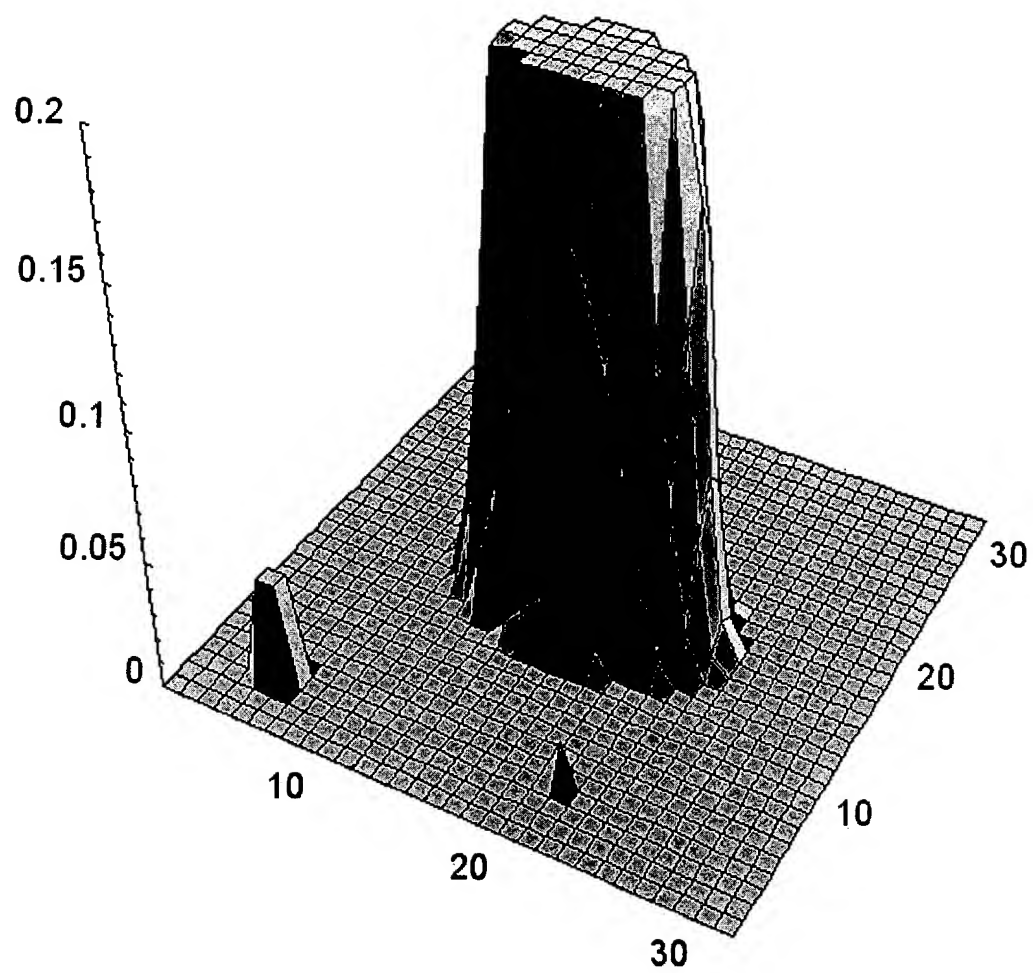
FIG. 20

Southwell reconstructor

FIG. 21